

CLAIMS:

[c001] 1. An imager, comprising:

a plurality of pixels disposed on a substrate in an imaging array pattern comprising rows and columns, each of the pixels comprising a respective photosensor coupled to a respective thin film switching transistor;

a plurality of scan lines disposed at a first level with respect to the substrate along a first axis of the imaging array pattern, each row of pixels in the imaging array pattern having a respective scan line, each of the respective scan lines being coupled to a respective gate electrode in the thin film switching transistor for each pixel disposed along the respective row of pixels in the imaging array pattern;

a plurality of data lines disposed at a second level with respect to the substrate along a second axis of the imaging array pattern, each column of pixels in the imaging array pattern having a corresponding data line, each of the respective data lines being coupled to a respective source electrode in the thin film switching transistors for each pixel disposed along the respective column of pixels in the imaging array pattern;

wherein each pixel comprises a storage capacitor coupled parallel to the photosensor, the storage capacitor comprising a signal electrode and a capacitor common electrode and a dielectric disposed between the signal electrode and the capacitor common electrode.

[c002] 2. The imager of claim 1, wherein the capacitor signal electrode comprises at least two conductive layers, and wherein the conductive layers are coupled together by a source metal via.

[c003] 3. The imager of claim 1, wherein the gate electrode of the thin film transistor and the capacitor signal electrode comprises a same material.

[c004] 4. The imager of claim 1, wherein the capacitor common electrode comprises molybdenum, chromium, tantalum, tungsten, aluminum, and titanium.

[c005] 5. The imager of claim 1, wherein the conductive layers form a lower pixel electrode of the photosensor and the source electrode of the thin film switching transistor.

[c006] 6. The imager of claim 5, wherein the conductive layer and the capacitor signal electrode are coupled by the source metal via.

[c007] 7. The imager of claim 1, wherein the capacitor signal electrode is larger than the common electrode of the storage capacitor.

[c008] 8. The imager of claim 1, further comprising a hole etched in the capacitor common electrode in a region under the source metal via.

[c009] 9. The imager of claim 1, further comprising a plurality of vias coupling the capacitor signal electrode to the photosensor.

[c010] 10. The imager of claim 9, wherein the number of vias is determined based on a required time constant of the photosensor.

[c011] 11. The imager of claim 9, wherein the distance between the vias is determined based on the required time constant of the photosensor.

[c012] 12. The imager of claim 9, further comprising a plurality of holes etched in the common electrode in a region under the plurality of vias.

[c013] 13. The imager of claim 1, wherein the photosensor is larger than the conductive layer.

[c014] 14. The imager of claim 1, wherein the storage capacitor is disposed under the photosensor.

[c015] 15. The imager of claim 1, wherein the imager is an X-ray imager.